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TE? OR ?TOSYLATE?))
L4 475 SEA ABB=ON PLU=ON L2 AND (MODERATOR OR ?IMIDAZOLE? OR
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L5 2 SEA ABB=ON PLU=ON L3 AND L4
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ATE? OR ?TOSYLATE?)) OR OXIDIZER? OR OXIDANT?)
L7 7 SEA ABB=ON PLU=ON L4 AND L6
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Hawley's
Condensed Chemical
Dictionary

TWELFTH EDITION

Revised by
Richard J. Lewis, Sr.

SCIENTIFIC & TECHNICAL
INFORMATION CENTER

NOV 23 1992

PATENT & TRADEMARK OFFICE

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Library of Congress Catalog Card Number 92-18951
ISBN 0-442-01131-8

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Printed in the United States of America

Published by Van Nostrand Reinhold
115 Fifth Avenue
New York, NY 10003

Chapman and Hall
2-6 Boundary Row
London, SE1 8HN

Thomas Nelson Australia
102 Dodds Street
South Melbourne 3205
Victoria, Australia

Nelson Canada
1120 Birchmount Road
Scarborough, Ontario M1K 5G4, Canada

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

Condensed chemical dictionary.

Hawley's condensed chemical dictionary.—12th ed./revised by

Richard J. Lewis, Sr.

p. cm.

ISBN 0-442-01131-8

I. Chemistry—Dictionaries. I. Hawley, Gessner Goodrich, 1905-1983

II. Lewis, Richard J., Sr. III. Title.

QD5.C5 1992

540'.3—dc20

92-18951

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troleum diluents. The higher the ratio, the better the solvent.

butyl acetoacetate. CAS: 591-60-6.



Properties: Colorless liquid, insoluble in water, soluble in alcohol and ether. d 0.9694 (20/20C), bp 213.9C, vap press 0.19 mm Hg (20C), flash p 185F (85C), wt/gal 8.1 lb (20C). Combustible.

Grade: Technical.

Use: Intermediate in synthesis of metal derivatives, dyestuffs, pharmaceuticals, flavoring.

butyl acetoxystearate.



Properties: See butyl acetyl ricinoleate.

Derivation: From castor oil, butylalcohol, and acetic anhydride with hydrogenation.

Use: Plasticizer, textile oils, adhesives.

butyl acetylene. See 1-hexyne.

butyl acetyl ricinoleate. $\text{C}_{24}\text{H}_{44}\text{O}_4$.

Properties: Yellow, oily liquid; mild odor; miscible with most organic solvents; d 0.940 (20/20C); sapon number 125; fp indefinite; becomes cloudy at -32C; solidifies at -65C. Flash p 230F (110C) (OC), refr index 1.4614 (20C). Saybolt viscosity 123 sec at 100F, wt/gal 7.8 lb (20C), almost insoluble in water. Combustible. Autoign temperature 725F (385C).

Derivation: From castor oil, butanol, and acetic anhydride.

Grade: Technical.

Use: Plasticizer, emulsifier, lubricant, detergent, protective coatings, special cleansing compounds, quick-breaking emulsions.

n-butyl acid phosphate. (n-butylphosphoric acid; acid butyl phosphate). CAS: 12788-93-1.

Properties: Water-white liquid, d 1.120-1.125 (25/4C), refr index 1.429 (25C), flash p (COC) 230F (110C). Soluble in alcohol, acetone, and toluene. Insoluble in water and petroleum naphtha. Combustible.

Hazard: Strong irritant to skin and tissue.

Use: Esterification catalyst and polymerizing agent, curing catalyst and accelerator in resins and coatings, special detergents.

N-tert-butylacrylamide. $\text{H}_2\text{C}=\text{CHCONHC}(\text{CH}_3)_3$.

Properties: White, crystalline solid; mp 128-130C; d 1.015 (30C). Soluble in methanol, ethanol, chloroform, and acetone. Combustible.

Hazard: Toxic by ingestion and inhalation. Irritant to skin.

Use: Monomer, organic intermediate.

n-butyl acrylate. CAS: 141-32-2.



Properties: Colorless liquid, fp -64C, boiling

range 145.7-148.0C, polymerizes readily on heating, vap press (20C) 3.2 mm Hg, d 0.9015 (20/20C), wt/gal 7.5 lb (20C), flash p 120F (49C) (OC). Nearly insoluble in water. Flammable.

Derivation: Reaction of acrylic acid or methyl acrylate with butanol.

Grade: Technical (inhibited).

Hazard: Moderate fire risk. TLV: 10 ppm in air.

Use: Intermediate in organic synthesis, polymers and copolymers for solvent coatings, adhesives, paints, binders, emulsifiers.

See also acrylic resin.

tert-butyl-acrylate. $\text{CH}_2=\text{CHCOOC}(\text{CH}_3)_3$.

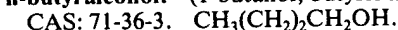
Properties: Liquid, bp 120C, d 0.879 (25C), refr index 1.4080 (25C), flash p 66F (18.8C) (TOC).

Commercial grade contains 100 ppm hydroquinone monomethyl ether as stabilizer.

Hazard: Toxic by ingestion and inhalation. Flammable, dangerous fire risk. TLV: 10 ppm in air.

Use: Monomer for acrylic resins.

n-butyl alcohol. (1-butanol; butyric alcohol).



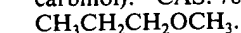
Properties: Colorless liquid, vinous odor. Bp 117.7C, fp -89.0C, d (20/20C) 0.8109, wt/gal (20C) 6.76 lb, refr index 1.3993 (20C), flash p 95F (35C). Soluble in water 7.7 wt % (20C), solution of water in n-butanol 20.1%. Miscible with alcohol and ether. Autoign temperature 689F (365C).

Derivation: (1) Hydrogenation of butyraldehyde, obtained in the Oxo process; (2) condensation of acetaldehyde to form crotonaldehyde, which is then hydrogenated (aldol condensation).

Hazard: Toxic on prolonged inhalation, irritant to eyes, absorbed by skin. Flammable, moderate fire risk. TLV: ceiling 50 ppm in air.

Use: Preparation of esters, especially butyl acetate; solvent for resins and coatings; plasticizers; dyeing assistant; hydraulic fluids; detergent formulations; dehydrating agent (by azeotropic distillation); intermediate; "butylated" melamine resins; glycol ethers; butyl acrylate.

sec-butyl alcohol. (SBA; 2-butanol; methylethylcarbinol). CAS: 78-92-2.



Properties: Colorless liquid, strong odor, bp 99.5C, fp -114C, d (20/4C) 0.808, wt/gal (20C) 66.74 lb, refr index 1.3949 (25C), flash p 75F (23.8C) (CC), autoign temperature 763F (406C). Moderately soluble in water, miscible with alcohol and ether.

Derivation: Absorption of butene from cracking petroleum or natural gas in sulfuric acid with subsequent hydrolysis by steam.

Grade: Technical.

Hazard: Toxic on prolonged inhalation, irritat-

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ing to eyes and skin. Flammable, dangerous fire risk. TLV: 100 ppm in air.

Use: Preparation of methyl ethyl ketone, solvent, organic synthesis, paint removers, industrial cleaners.

tert-butyl alcohol. (2-methyl-2-propanol; tri-methyl carbinol). CAS: 75-65-0. $(\text{CH}_3)_3\text{COH}$.

Properties: Colorless liquid or crystals, camphor odor, fp 25.5C, bp 82.9C, d (liquid 26C) 0.779, refr index 1.3878 (20C), flash p 52F (11.1C) (CC), autoign temperature 892F (477C). Miscible with water, alcohol, and ether.

Derivation: Absorption of isobutene from cracking petroleum or natural gas in sulfuric acid with subsequent hydrolysis by steam.

Grade: Technical.

Hazard: Irritant to eyes and skin. Flammable, dangerous fire risk. TLV: 100 ppm in air.

Use: Alcohol denaturant, solvent for pharmaceuticals, dehydration agent, perfumery, chemical intermediate, paint removers, manufacture of methyl methacrylate, octane booster in unleaded gasoline (EPA approved).

n-butyl aldehyde. See butyraldehyde.

n-butylamine. (1-aminobutane).

CAS: 109-73-9. $\text{C}_4\text{H}_9\text{NH}_2$.

Properties: Colorless, volatile liquid with amine odor; bp 77.1C; fp -49.1C; d 0.7385 (20/20C), wt/gal 6.2 lb (20C); refr index 1.401 (20C); flash p 30F (1.1C) (OC), miscible with water, alcohol, ether.

Derivation: Reaction of butanol or butyl chloride with ammonia.

Grade: Technical.

Hazard: Skin irritant. Flammable, dangerous fire risk. TLV: ceiling 5 ppm in air.

Use: Intermediate for emulsifying agents, pharmaceuticals, insecticides, rubber chemicals, dyes, tanning agents.

sec-butylamine. (2-aminobutane).

CAS: 13952-84-6. $\text{CH}_3\text{CHNH}_2\text{C}_2\text{H}_5$.

Properties: Colorless liquid, d 0.725 (20C), boiling range 63-68C, refr index 1.395 (20C), solidification point -104C, odor amine, flash p 15F (-9.4C), wt/gal 6.0 lb (20C).

Hazard: Flammable, dangerous fire risk.

Use: Fungicide.

tert-butylamine. CAS: 75-64-9. $(\text{CH}_3)_3\text{CNH}_2$.

Properties: Colorless liquid, bp 44-46C, fp -72C, d 0.700 (15C), refr index 1.3794 (18C), flash p approximately 50F (10C). Miscible with water, soluble in common organic solvents.

Grade: Technical.

Hazard: Skin irritant. Flammable, dangerous fire risk.

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Use: Intermediate for rubber accelerators, insecticides, fungicides, dyestuffs, pharmaceuticals.

butyl-o-aminobenzoate. See butyl anthranilate.

n-butyl-p-aminobenzoate. $\text{H}_2\text{NC}_6\text{H}_4\text{COOC}_4\text{H}_9$.

Properties: White powder, odorless, tasteless, mp 57-59C, bp 174C (8 mm Hg). Soluble in dilute acids, alcohol, chloroform, ether, and fatty oils; almost insoluble in water.

Grade: NF.

Hazard: Toxic by ingestion.

Use: Medicine (local anesthetic), treatment of burns, ointments, UV absorber in suntan preparations.

N-n-butylaminoethanol. $\text{C}_4\text{H}_9\text{NHC}_2\text{H}_4\text{OH}$.

Properties: Liquid, d 0.88-0.99 (20/20C), distillation range 192-210C, wt/gal 7.4 lb, flash p 170F (76.6C). Combustible.

tert-butylaminoethyl methacrylate.

$\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_2\text{CH}_2\text{NHC}(\text{CH}_3)_3$.

Properties: Liquid, bp 100-105C (12 mm Hg), d 0.914 (25C), wt/gal 7.61 lb, refr index 1.4440 (25C), flash p 205F (96.1C) (COC). Combustible.

Use: Coatings, textile chemicals, dispersing agent for nonaqueous systems, antistatic agent, stabilizer for chlorinated polymers, ion-exchange resins, emulsifying agent, cationic precipitating agent.

N'-n-butyl-3-amino-4-methoxybenzenesulfonamide.

$\text{CH}_3\text{OC}_6\text{H}_3(\text{NH}_2)\text{SO}_2\text{NHC}_4\text{H}_9$.

Properties: Pink powder, mp 96-100C, insoluble in water, partially soluble in alcohol and acetone. Used as an intermediate.

N-n-butylaniline. $\text{C}_6\text{H}_5\text{NHC}_4\text{H}_9$.

Properties: Amber liquid, d 0.932 (20C), boiling range 236-242C, refr index 1.534 (20C), odor aniline, very soluble in alcohol and ether, insoluble in water, flash p 225F (107C). Combustible.

Use: Organic synthesis, dyes.

butyl anthranilate. (butyl-o-aminobenzoate).

$\text{C}_4\text{H}_9\text{OOCOC}_6\text{H}_4\text{NH}_2$.

Used in flavoring.

2-tert-butylanthraquinone. $\text{C}_{18}\text{H}_{16}\text{O}_2$.

Properties: Yellow powder, mp 102-104C, soluble in alcohol and acetone. Combustible.

Grade: Technical (98%).

Use: Organic synthesis.

butylated hydroxyanisole. (BHA).

CAS: 25013-16-5. $(\text{CH}_3)_2\text{CC}_6\text{H}_3\text{OH}(\text{OCH}_3)$. A mixture of 2- and 3-tert-4-methoxyphenol.

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